1625 Distr. REGISTERED 1301 1000 District IV 1220 S. St. Francis Dr., Santa Fe, NM 87505 6003 1 23

State of New Mexico s and Natural Resources -epartment ervation Division

1220 South St. Francis Dr. Santa Fe, NM 87505

For temporary pits, closed-loop systems, and below-grade tanks, submit to the appropriate NMOCD District Office.

For permanent pits and exceptions submit to the Santa Fe Environmental Bureau office and provide a copy to the appropriate NMOCD District Office.

Pit. Closed-Loop System, Below-Grade Tank, or

Proposed Alternative Method Permit or Closure Plan Application
Type of action: Existing BGT Closure of a pit, closed-loop system, below-grade tank, or proposed alternative method Modification to an existing permit Closure plan only submitted for an existing permitted or non-permitted pit, closed-loop system, below-grade tank, or proposed alternative method
Instructions: Please submit one application (Form C-144) per individual pit, closed-loop system, below-grade tank or alternative request
Please be advised that approval of this request does not relieve the operator of liability should operations result in pollution of surface water, ground water or the environment. Nor does approval relieve the operator of its responsibility to comply with any other applicable governmental authority's rules, regulations or ordinar
I. Operator: XTO Energy, Inc. OGRID #: 5380
Address: #382 County Road 3100, Aztec, NM 87410
Facility or well name: MC Adams CA C #1
API Number: <u>30-045-06790</u> OCD Permit Number:
U/L or Qtr/Qtr P Section 05 Township 27N Range 10W County: San Juan
Center of Proposed Design: Latitude 36.59947 Longitude 107.9122 NAD: ☐ 1927 ☒ 1983
Surface Owner: ☑ Federal ☐ State ☐ Private ☐ Tribal Trust or Indian Allotment
2. Pit: Subsection F or G of 19.15.17.11 NMAC Temporary: Drilling Workover Permanent Emergency Cavitation P&A

Permanent Emergency Cavitation P&A					
☐ Lined ☐ Unlined Liner type: Thicknessmil ☐ LI	LDPE HDPE P	VC Other			
String-Reinforced					
Liner Seams: Welded Factory Other	Volume:	bbl Dimensions: L	x W	x D	
3.					_
Closed-loop System: Subsection H of 19.15.17.11 NMAC					
Type of Operation: P&A Drilling a new well Workover or intent)	Drilling (Applies to act	ivities which require prior appr	oval of a pen	nit or notice of	
☐ Drying Pad ☐ Above Ground Steel Tanks ☐ Haul-off Bins ☐	Other				
Lined Unlined Liner type: Thicknessmil] LLDPE 🗌 HDPE 🗌	PVC Other			
Liner Seams: Welded Factory Other					
4. Subsection I of 19.15.17.11 NMAC					

Volume: <u>95</u>	bbl Type of fluid:	Produced Water					
Tank Construction mat	terial: Steel						
☐ Secondary contain	ment with leak detection Visib	ole sidewalls, liner, 6-inch lift	and automatic overflow shut-off				
☐ Visible sidewalls and liner ☐ Visible sidewalls only ☒ Other Visible sidewalls, vaulted, automatic high-level shut off, no liner							
Liner type: Thickness	mil	DPE PVC Other					
							

Alternative Method:

Submittal of an exception request is required. Exceptions must be submitted to the Santa Fe Environmental Bureau office for consideration of approval.

Fencing: Subsection D of 19.15.17.11 NMAC (Applies to permanent pits, temporary pits, and below-grade tanks) Chain link, six feet in height, two strands of barbed wire at top (Required if located within 1000 feet of a permanent residence, school, hospital, institution or church) Four foot height, four strands of barbed wire evenly spaced between one and four feet Alternate. Please specify Four foot height, steel mesh field fence (hogwire) with pipe top railing						
Netting: Subsection E of 19.15.17.11 NMAC (Applies to permanent pits and permanent open top tanks) Screen Netting Other Expanded metal or solid vaulted top Monthly inspections (If netting or screening is not physically feasible)						
Signs: Subsection C of 19.15.17.11 NMAC ☐ 12"x 24", 2" lettering, providing Operator's name, site location, and emergency telephone numbers ☐ Signed in compliance with 19.15.3.103 NMAC						
Administrative Approvals and Exceptions: Justifications and/or demonstrations of equivalency are required. Please refer to 19.15.17 NMAC for guidance. Please check a box if one or more of the following is requested, if not leave blank: Administrative approval(s): Requests must be submitted to the appropriate division district or the Santa Fe Environmental Bureau consideration of approval. Exception(s): Requests must be submitted to the Santa Fe Environmental Bureau office for consideration of approval.	office for					
Siting Criteria (regarding permitting): 19.15.17.10 NMAC Instructions: The applicant must demonstrate compliance for each siting criteria below in the application. Recommendations of accept material are provided below. Requests regarding changes to certain siting criteria may require administrative approval from the approp office or may be considered an exception which must be submitted to the Santa Fe Environmental Bureau office for consideration of applicant must attach justification for request. Please refer to 19.15.17.10 NMAC for guidance. Siting criteria does not apply to drying above-grade tanks associated with a closed-loop system.						
Ground water is less than 50 feet below the bottom of the temporary pit, permanent pit, or below-grade tank. - NM Office of the State Engineer - iWATERS database search; USGS; Data obtained from nearby wells	☐ Yes ⊠ No					
Within 300 feet of a continuously flowing watercourse, or 200 feet of any other significant watercourse or lakebed, sinkhole, or playa lake (measured from the ordinary high-water mark). - Topographic map; Visual inspection (certification) of the proposed site	☐ Yes ⊠ No					
Within 300 feet from a permanent residence, school, hospital, institution, or church in existence at the time of initial application. (Applies to temporary, emergency, or cavitation pits and below-grade tanks) - Visual inspection (certification) of the proposed site; Aerial photo; Satellite image	☐ Yes ☑ No ☐ NA					
Within 1000 feet from a permanent residence, school, hospital, institution, or church in existence at the time of initial application. (Applies to permanent pits) - Visual inspection (certification) of the proposed site; Aerial photo; Satellite image	☐ Yes ☐ No ☐ NA					
Within 500 horizontal feet of a private, domestic fresh water well or spring that less than five households use for domestic or stock watering purposes, or within 1000 horizontal feet of any other fresh water well or spring, in existence at the time of initial application. - NM Office of the State Engineer - iWATERS database search; Visual inspection (certification) of the proposed site	☐ Yes ⊠ No					
Within incorporated municipal boundaries or within a defined municipal fresh water well field covered under a municipal ordinance adopted pursuant to NMSA 1978, Section 3-27-3, as amended. - Written confirmation or verification from the municipality; Written approval obtained from the municipality	☐ Yes ⊠ No					
Within 500 feet of a wetland. - US Fish and Wildlife Wetland Identification map; Topographic map; Visual inspection (certification) of the proposed site	☐ Yes ⊠ No					
Within the area overlying a subsurface mine. - Written confirmation or verification or map from the NM EMNRD-Mining and Mineral Division	☐ Yes ☑ No					
Within an unstable area. - Engineering measures incorporated into the design; NM Bureau of Geology & Mineral Resources; USGS; NM Geological Society; Topographic map	☐ Yes ⊠ No					
Within a 100-year floodplain FEMA map	☐ Yes ☑ No					

11. Temporary Pits, Emergency Pits, and Below-grade Tanks Permit Application Attachment Checklist: Subsection B of 19.15.17.9 NMAC Instructions: Each of the following items must be attached to the application. Please indicate, by a check mark in the box, that the documents are
attached. ☐ Hydrogeologic Report (Below-grade Tanks) - based upon the requirements of Paragraph (4) of Subsection B of 19.15.17.9 NMAC ☐ Hydrogeologic Data (Temporary and Emergency Pits) - based upon the requirements of Paragraph (2) of Subsection B of 19.15.17.9 NMAC ☐ Siting Criteria Compliance Demonstrations - based upon the appropriate requirements of 19.15.17.10 NMAC ☐ Design Plan - based upon the appropriate requirements of 19.15.17.11 NMAC ☐ Operating and Maintenance Plan - based upon the appropriate requirements of 19.15.17.12 NMAC
Closure Plan (Please complete Boxes 14 through 18, if applicable) - based upon the appropriate requirements of Subsection C of 19.15.17.9 NMAC and 19.15.17.13 NMAC
Previously Approved Design (attach copy of design) API Number: or Permit Number:
Closed-loop Systems Permit Application Attachment Checklist: Subsection B of 19.15.17.9 NMAC Instructions: Each of the following items must be attached to the application. Please indicate, by a check mark in the box, that the documents are attached. Geologic and Hydrogeologic Data (only for on-site closure) - based upon the requirements of Paragraph (3) of Subsection B of 19.15.17.9 Siting Criteria Compliance Demonstrations (only for on-site closure) - based upon the appropriate requirements of 19.15.17.10 NMAC Design Plan - based upon the appropriate requirements of 19.15.17.11 NMAC Operating and Maintenance Plan - based upon the appropriate requirements of 19.15.17.12 NMAC Closure Plan (Please complete Boxes 14 through 18, if applicable) - based upon the appropriate requirements of Subsection C of 19.15.17.9 NMAC
and 19.15.17.13 NMAC
 □ Previously Approved Design (attach copy of design) □ Previously Approved Operating and Maintenance Plan □ API Number: (Applies only to closed-loop system that use
above ground steel tanks or haul-off bins and propose to implement waste removal for closure)
Permanent Pits Permit Application Checklist: Subsection B of 19.15.17.9 NMAC Instructions: Each of the following items must be attached to the application. Please indicate, by a check mark in the box, that the documents are attached. Hydrogeologic Report - based upon the requirements of Paragraph (1) of Subsection B of 19.15.17.9 NMAC Siting Criteria Compliance Demonstrations - based upon the appropriate requirements of 19.15.17.10 NMAC Climatological Factors Assessment Certified Engineering Design Plans - based upon the appropriate requirements of 19.15.17.11 NMAC Dike Protection and Structural Integrity Design - based upon the appropriate requirements of 19.15.17.11 NMAC Leak Detection Design - based upon the appropriate requirements of 19.15.17.11 NMAC Quality Control/Quality Assurance Construction and Installation Plan Operating and Maintenance Plan - based upon the appropriate requirements of 19.15.17.12 NMAC Freeboard and Overtopping Prevention Plan - based upon the appropriate requirements of 19.15.17.11 NMAC Nuisance or Hazardous Odors, including H ₂ S, Prevention Plan Oil Field Waste Stream Characterization Monitoring and Inspection Plan Closure Plan - based upon the appropriate requirements of Subsection C of 19.15.17.9 NMAC and 19.15.17.13 NMAC
Proposed Closure: 19.15.17.13 NMAC Instructions: Please complete the applicable boxes, Boxes 14 through 18, in regards to the proposed closure plan.
Type: Drilling Workover Emergency Cavitation P&A Permanent Pit Below-grade Tank Closed-loop System Alternative Proposed Closure Method: Waste Excavation and Removal Waste Removal (Closed-loop systems only) On-site Closure Method (Only for temporary pits and closed-loop systems) In-place Burial On-site Trench Burial Alternative Closure Method (Exceptions must be submitted to the Santa Fe Environmental Bureau for consideration)
Waste Excavation and Removal Closure Plan Checklist: (19.15.17.13 NMAC) Instructions: Each of the following items must be attached to the closure plan. Please indicate, by a check mark in the box, that the documents are attached. ☑ Protocols and Procedures - based upon the appropriate requirements of 19.15.17.13 NMAC ☑ Confirmation Sampling Plan (if applicable) - based upon the appropriate requirements of Subsection F of 19.15.17.13 NMAC ☑ Disposal Facility Name and Permit Number (for liquids, drilling fluids and drill cuttings) ☑ Soil Backfill and Cover Design Specifications - based upon the appropriate requirements of Subsection H of 19.15.17.13 NMAC ☑ Re-vegetation Plan - based upon the appropriate requirements of Subsection G of 19.15.17.13 NMAC

Waste Removal Closure For Closed-loop Systems That Utilize Above Ground St Instructions: Please indentify the facility or facilities for the disposal of liquids, drafacilities are required.							
	isposal Facility Permit Number:						
Disposal Facility Name: Disposal Facility Permit Number:							
Will any of the proposed closed-loop system operations and associated activities occu ☐ Yes (If yes, please provide the information below) ☐ No							
Required for impacted areas which will not be used for future service and operations Soil Backfill and Cover Design Specifications based upon the appropriate re Re-vegetation Plan - based upon the appropriate requirements of Subsection I of Site Reclamation Plan - based upon the appropriate requirements of Subsection	equirements of Subsection H of 19.15.17.13 NMAC of 19.15.17.13 NMAC	C					
Siting Criteria (regarding on-site closure methods only): 19.15.17.10 NMAC Instructions: Each siting criteria requires a demonstration of compliance in the cloprovided below. Requests regarding changes to certain siting criteria may require a considered an exception which must be submitted to the Santa Fe Environmental Bedemonstrations of equivalency are required. Please refer to 19.15.17.10 NMAC for	administrative approval from the appropriate disti ureau office for consideration of approval. Justi	rict office or may be					
Ground water is less than 50 feet below the bottom of the buried waste. - NM Office of the State Engineer - iWATERS database search; USGS; Data of	btained from nearby wells	Yes No					
Ground water is between 50 and 100 feet below the bottom of the buried waste - NM Office of the State Engineer - iWATERS database search; USGS; Data obtained from nearby wells							
Ground water is more than 100 feet below the bottom of the buried waste. - NM Office of the State Engineer - iWATERS database search; USGS; Data obtained from nearby wells							
Within 300 feet of a continuously flowing watercourse, or 200 feet of any other significant watercourse or lakebed, sinkhole, or playa lake (measured from the ordinary high-water mark). - Topographic map; Visual inspection (certification) of the proposed site							
Within 300 feet from a permanent residence, school, hospital, institution, or church in Visual inspection (certification) of the proposed site; Aerial photo; Satellite in		☐ Yes ☐ No					
Within 500 horizontal feet of a private, domestic fresh water well or spring that less the watering purposes, or within 1000 horizontal feet of any other fresh water well or spring that less the watering purposes, or within 1000 horizontal feet of any other fresh water well or spring that less than 1000 horizontal feet of any other fresh water well or spring that less than 1000 horizontal feet of any other fresh water well or spring that less than 1000 horizontal feet of any other fresh water well or spring that less than 1000 horizontal feet of any other fresh water well or spring that less than 1000 horizontal feet of any other fresh water well or spring that less than 1000 horizontal feet of any other fresh water well or spring that less than 1000 horizontal feet of any other fresh water well or spring that less than 1000 horizontal feet of any other fresh water well or spring that less than 1000 horizontal feet of any other fresh water well or spring that less than 1000 horizontal feet of any other fresh water well or spring that less than 1000 horizontal feet of any other fresh water well or spring that less than 1000 horizontal feet of any other fresh water well or spring that less than 1000 horizontal feet of any other fresh water well or spring than 1000 horizontal feet of any other fresh water well or spring that less than 1000 horizontal feet of any other fresh water well or spring that less than 1000 horizontal feet of any other fresh water well or spring that less than 1000 horizontal feet of any other fresh water well or spring that less than 1000 horizontal feet of any other fresh water well or spring that less than 1000 horizontal feet of any other fresh water well or spring that less than 1000 horizontal feet of any other fresh water well or spring that less than 1000 horizontal feet of any other fresh water well or spring than 1000 horizontal feet of any other fresh water well or spring than 1000 horizontal feet of any other feet of any other feet of any other feet of any other feet of any othe	ng, in existence at the time of initial application.	☐ Yes ☐ No					
Within incorporated municipal boundaries or within a defined municipal fresh water adopted pursuant to NMSA 1978, Section 3-27-3, as amended. - Written confirmation or verification from the municipality; Written approval		Yes No					
Within 500 feet of a wetland US Fish and Wildlife Wetland Identification map; Topographic map; Visual in	nspection (certification) of the proposed site	☐ Yes ☐ No					
Within the area overlying a subsurface mine. - Written confirmation or verification or map from the NM EMNRD-Mining and	nd Mineral Division	☐ Yes ☐ No					
Within an unstable area. - Engineering measures incorporated into the design; NM Bureau of Geology & Society; Topographic map	ι Mineral Resources; USGS; NM Geological	Yes No					
Within a 100-year floodplain FEMA map		Yes No					
18. On-Site Closure Plan Checklist: (19.15.17.13 NMAC) Instructions: Each of the following items must be attached to the closure plan. Please indicate, by a check mark in the box, that the documents are attached. Siting Criteria Compliance Demonstrations - based upon the appropriate requirements of 19.15.17.10 NMAC Proof of Surface Owner Notice - based upon the appropriate requirements of Subsection F of 19.15.17.13 NMAC Construction/Design Plan of Burial Trench (if applicable) based upon the appropriate requirements of 19.15.17.11 NMAC Construction/Design Plan of Temporary Pit (for in-place burial of a drying pad) - based upon the appropriate requirements of 19.15.17.13 NMAC Confirmation Sampling Plan (if applicable) - based upon the appropriate requirements of Subsection F of 19.15.17.13 NMAC Waste Material Sampling Plan - based upon the appropriate requirements of Subsection F of 19.15.17.13 NMAC Disposal Facility Name and Permit Number (for liquids, drilling fluids and drill cuttings or in case on-site closure standards cannot be achieved) Soil Cover Design - based upon the appropriate requirements of Subsection I of 19.15.17.13 NMAC Re-vegetation Plan - based upon the appropriate requirements of Subsection I of 19.15.17.13 NMAC							

19. Operator Application Certification:		
I hereby certify that the information submitted with this application is tr	rue, accurate and complete to the best of my knowledge and belief.	
Name (Print): Kim Champlin	Title: Environmental Representative	
Signature: Kun Champlin	Date:01/30/2009	
e-mail address: kim_champlin@xtoenergy.com		_
OCD Approval: Permit Application (including closure plan)	Closure Plan (only) OCD Conditions (see attachment)	
OCD Representative Signature:	Approval Date:	-
Title:	OCD Permit Number:	
Closure Report (required within 60 days of closure completion): Substructions: Operators are required to obtain an approved closure plate the closure report is required to be submitted to the division within 60 section of the form until an approved closure plan has been obtained a	lan prior to implementing any closure activities and submitting the closure repor O days of the completion of the closure activities. Please do not complete this	rt.
	Closure Completion Date:	
Closure Method: Waste Excavation and Removal On-Site Closure Method If different from approved plan, please explain.	☐ Alternative Closure Method ☐ Waste Removal (Closed-loop systems only)	
23. Closure Report Regarding Waste Removal Closure For Closed-loop Instructions: Please indentify the facility or facilities for where the liq two facilities were utilized.	o Systems That Utilize Above Ground Steel Tanks or Haul-off Bins Only: quids, drilling fluids and drill cuttings were disposed. Use attachment if more th	ıan
Disposal Facility Name:	Disposal Facility Permit Number:	
Disposal Facility Name:	Disposal Facility Permit Number:	
Were the closed-loop system operations and associated activities perform Yes (If yes, please demonstrate compliance to the items below)	med on or in areas that will not be used for future service and operations? No	
Required for impacted areas which will not be used for future service an Site Reclamation (Photo Documentation) Soil Backfilling and Cover Installation Re-vegetation Application Rates and Seeding Technique	nd operations:	
mark in the box, that the documents are attached. Proof of Closure Notice (surface owner and division) Proof of Deed Notice (required for on-site closure) Plot Plan (for on-site closures and temporary pits) Confirmation Sampling Analytical Results (if applicable) Waste Material Sampling Analytical Results (required for on-site Disposal Facility Name and Permit Number Soil Backfilling and Cover Installation Re-vegetation Application Rates and Seeding Technique Site Reclamation (Photo Documentation)		c
On-site Closure Location: Latitude	Longitude NAD:	
Operator Closure Certification: I hereby certify that the information and attachments submitted with this belief. I also certify that the closure complies with all applicable closure Name (Print):		
Signature:	Date:	
e-mail address:	Telephone:	_

NEW MEXICO OIL CONSERVATION COMMISSION Well Location and Acreage Dedication Plat

SECTION A.				Dote March 9, 1964
	erican Petrole	um Componati	00.	
	Unit Letter P Feet From an	Section 5	Fownship 2 Line 790	C. A. McAdams 7 North Range 10 WestNMPM Feet From East Line Gted Arreage 321.04 Acres Basin Dakota
1 Is the Operator	the only owner* in th	ne dedicated acrea	ge cuttimed on the p	lat below? Yes No X
agreement or or	therwise? Yes. X mad acreage - al	No If o	ved drilling of	
	OWNER			RECEIVED MAR 1 6 1964
SECTION 8.				OIL CON. COM.
40.37	40.43	40.49	40.55	This is to early that the informa- tion in Section A above is true and complete to the best of my knowledge and belief
				PAN AMERICAN PETROLEUM CORP. 7. H. Hallingsworth
	 Sec.	5		P. O. Box 480 Farmington, New Mexico
		S F- 077941		This is to certify that the well location shown on the plat in Section B was plotted from field nates of actual surveys made by the or under this supports into and that the same is true and correct to the best of my knowledge and belief
	 		990	Dote Surveyed Jan. 31, 1964 Four States Engineering Co. 1987 NO. D. N. NOW MENTON Cancelly Can Language AND SURVEYER AND SURVEYER
0 330 660 980 17	ED 1860 1980 2310 1	Ae 2000 15	an loop Stor	Ting Gernfleure No. 3602

A		Die Dannie	Client:	XTO Energy
Lodestar Service	es, Inc.	Pit Permit	Project:	Pit Permits
PO Box 4465, Durang		Siting Criteria	Revised:	1/27/2009
V		Information Sheet	Prepared by:	Daniel Newman
API#:[30-045-06790	USPLSS:	T27N,R10W,05P
Name:	M	lc Adams CA C # 1	Lat/Long:	36.59947 / -107.9122
Depth to groundwater:		> 100 feet	Geologic formation: I	Nacimiento Formation
Distance to closest continuously flowing watercourse:	7.29 mile	es south of the San Juan River		
Distance to closest significant watercourse, lakebed, playa lake, or sinkhole:	587 feet	et north of an unnamed arroyo		
			Soil Type:	Entisols & Aridsoils
Permanent residence, school, hospital, institution or church within 300'		No		
		:	Annual Precipitation:	Bloomfield 8.71", Farmington 8.21", Otis 10.41"average
Domestic fresh water well or spring within 500'		No	Precipitation Notes:	Historical daily max: Bloomfield 4.19"
Any other fresh water well or spring within 1000'		No		
Within incorporated municipal boundaries		No	Attached Documents:	
Within defined municipal fresh water well field		No		Topo map, ground water data map, ariel photo, mines and quarries map, FEMA map
Wetland within 500'		No	Mining Activity:	No
Within unstable area		No		
Within 100 year flood plain		FEMA Zone 'X'		
				The second secon
Additional Notes:				

Mc Adams CA C # 1 Below Ground Tank Hydrogeologic Report for Siting Criteria

General Geology and Hydrology

The San Juan Basin is a typical Rocky Mountain basin with a gently dipping southern flank and a steeply dipping northern flank. Asymmetrically layered Tertiary sandstones and shales, along with Quaternary alluvial deposits, dominate surficial geology (Dane and Bachman, 1965). The proposed pit location will be located in the southern Kutz Canyon region of San Juan County. The predominant geologic formation is the Nacimiento Formation of Tertiary age, which underlies surface soils and is often exposed (Dane and Bachman, 1965). Deposits of Quaternary alluvial and aeolian sands occur prominently near the surface of the area, especially near streams and washes.

Cretaceous and Tertiary sandstones, as well as Quaternary alluvial deposits serve as the primary aquifers in the San Juan basin (Stone et al., 1983). In most of the proposed area, the Nacimiento Formation lies at the surface and grades into the Animas Formation to the west. Thickness of the Nacimiento ranges from 418 to 2232 feet (Stone et al., 1983). Aquifers within the coarser and continuous sandstone bodies of the Nacimiento Formation are between 0 and 1000' deep in this section of the basin (Stone et al., 1983). Groundwater within these aquifers flows toward the San Juan River.

The prominent soil type at the proposed site are entisols and aridsoils, which are defined as soils that exhibit little to no any profile development (www.emnrd.state.nm.us). Soils are basically unaltered from their parent rock. Miles of arroyos washes and intermittent streams exist as part of the drainage network towards the San Juan River. These features often cut into soil and other unconsolidated materials, contributing to sedimentation downstream. The sudden influx of water from storm events easily erodes the soils that cover the area and prohibits effective recharge to the underlying aquifers.

Dry and arid weather further prohibit active recharge. The climate of the region is arid, averaging 8 to 12 inches of rain fall annually. As is typical of the southwestern United States monsoonal weather patterns, most precipitation fall from August through October. The heaviest rainfall occurs in the summer in isolated, intense cloudbursts. November through June is relatively dry. Snow generally falls from December to mid-February and averages less than one-half inch in depth. However, most recharge occurs during the winter months during snowmelt periods from the upper elevations (Western Regional Climate Center www.wrcc.dri.edu)

The predominant vegetation is sagebrush and grasses with a more restricted pinion-juniper association (Dick-Peddie, 1993). However, vegetation is very sparse and discontinuous.

Site Specific Hydrogeology

Depth to groundwater is estimated to be greater than 100 feet. This estimation is based on data from Stone and others (1983), the USGS Groundwater Atlas of the United States and depth to groundwater data published on the New Mexico State Engineer's iWaters Database website. Local topography and proximity to surface hydrologic features are also taken into consideration.

Beds of water-yielding sandstone are present in the Nacimiento Formation, which are fluvial in origin and are interbedded with siltstone, shale and coal. Porous sandstones form the principal aquifers, while relatively impermeable shales form confining units between the aquifers (Stone et al., 1983). Local aquifers exist within the Nacimiento Formation at depth s greater than 100 feet and thicknesses of the aquifer can be up to 3500 feet (USGS, Groundwater Atlas of the US).

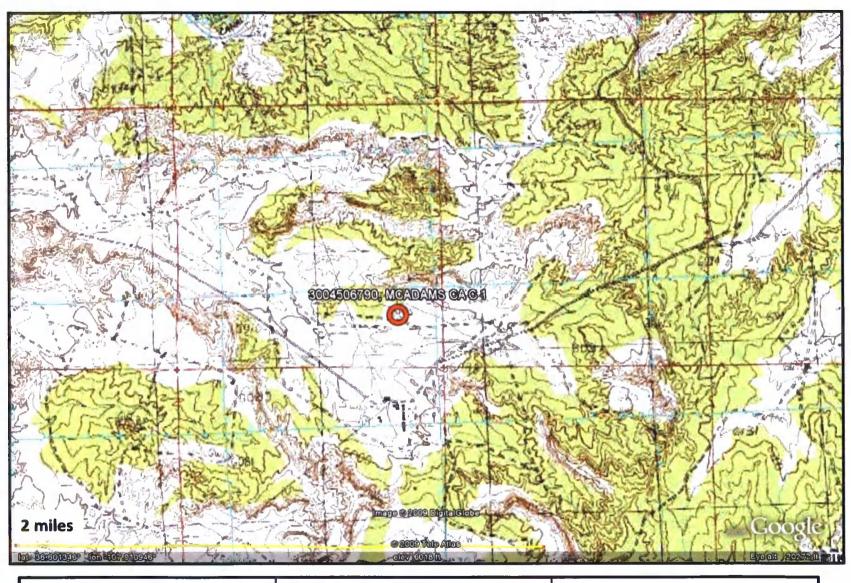
The site in question is located near Kutz Canyon, where deeply eroded sandstone-capped mesas and slope-forming mudstone occur in a sparsely vegetated and arid badlands-type setting. Broad shaley hills are interspersed with occasional sandstone outcrops, and systems of dry washes and their tributaries are evident on the attached aerial image.

The pit will be located approximately 2.27 miles east of Kutz Canyon at an elevation of approximately 5,968 feet. Ground water is expected to be shallow within Kutz Canyon. The floor of Kutz Canyon sits at 5,724 feet, an elevation difference of approximately 240 feet exists between the site and the floor of Kutz Canyon. The elevation difference of approximately 240 feet between the proposed site and the floor of Kutz Canyon, suggests that depth to groundwater is greater than 100 feet at the proposed site.

Lined channels associated with the Navajo Irrigation Project supply water for nearby agriculture lands, which are characterized by center-pivot irrigation patterns. During spring and summer, irrigation practices often produces shallow perched aquifers that are not defined in published literature. These shallow zones of water are not continuous and are not saturated year round.

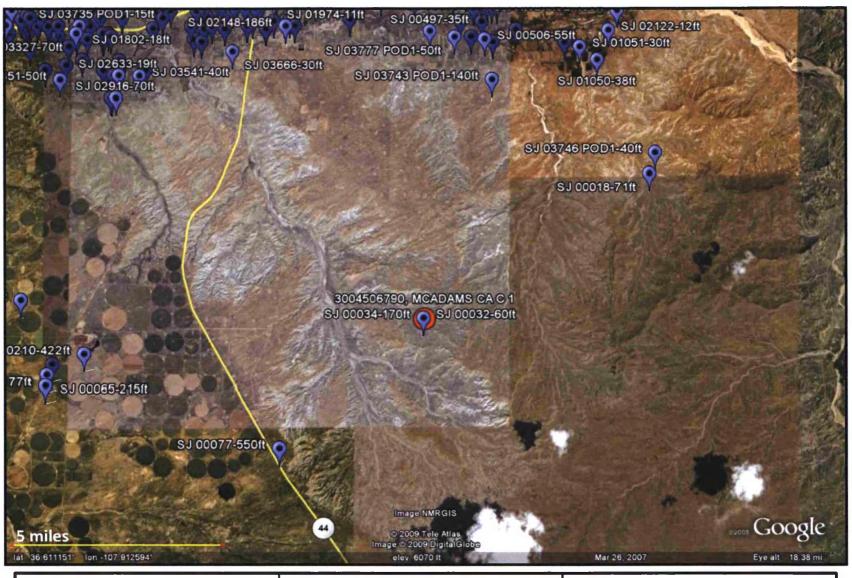
Groundwater data available from the NM State Engineer's iWaters Database for wells near the proposed site are attached. A map showing the locations of wells in reference to the proposed pit location is also attached. Water drops show locations of wells and the labels for each water drop indicate depth to groundwater in feet. The closest well to the site (iWaters SJ00032) is at an elevation of approximately 5,983 feet and is located 2,024 feet to the south this well puts depth to groundwater at 60 feet below the surface. However the next closest (iWaters SJ00034) places distance to groundwater at 170 feet, and this site sits at the same location as iWaters well SJ00032. With this conflict with depth to groundwater the elevation difference of approximately 240 feet between the floor of Kutz Canyon and the proposed site should be used as the deciding factor on distance to groundwater in this case, seeing how the water wells surrounding the proposed sites cannot be used to accurately judge distance to groundwater. The

observations made within this report suggest that distance to groundwater to be greater than 100 feet deep at the proposed location.



Lodestar Services, Inc PO Box 4465 Durango, CO 81302 Mc Adams CA C # 1 T27N,R10W,05P SAN JUAN COUNTY, NM

TOPOGRAPHIC MAP



Lodestar Services, Inc PO Box 4465 Durango, CO 81302 Mc Adams CA C # 1 T27N,R10W,05P SAN JUAN COUNTY, NM

i-Waters Ground Water Data Map

		AVER	AGE	DEPTH OF	WATER	REPORT	1	1/11/200	18		
Bsn	Tws	Rng	Sec	Zone	x	,	,	Wells	(Depth Min	Water in Max	Feet)
SJ	26N	0 9 W		Bone		•		1	40	40	40
SJ	2 6N	09W	12					1	175	175	175
SJ	26N	0 9 W	1.6					1	€5	65	65
SJ	26N	09W	26					3	215	234	226

AVERAGE DEPTH OF WATER REPORT 11/10/2008

							(Depth	Water in	Feet)
Bsn	Tws	Rng Sec	Zone	X	Y	Wells	Min	Max	Avg
SJ	27N	10W 08				2	€0	170	115

AVERAGE DEPTH OF WATER REPORT 11/03/2008

							(Depth	Water in	Feet)
Bsn	Tws	Rng Sec	Zone	X	Y	Wells	Min	Max	Avg
SJ	27N	11W 26				1	550	550	550

AVERAGE DEPTH OF WATER REPORT 11/03/2008

							(Depth	water in	reet)
Bsn	Tws	Rng Sec	Zone	X	Y	Wells	Min	Max	Avg
RG	27N	12W 02				1	145	145	145
SJ	27N	12W 13				4	177	422	306

AVERAGE DEPTH OF WATER REPORT 01/21/2009

								(Depth	Water in	Feet)
Bsn	Tws	Rng	Sec	Zone	X	Y	Wells	Min	Max	Avg
SJ	28N	OBW	14				1	480	480	480
SJ	28N	OBW	1.7				1			
SJ	29N	OBW	18				1	900	800	8.0.0

Record Count: 3

AVERAGE DEPTH OF WATER REPORT 01/09/2009

								(Depth	Water in	Feet)
Bsn	Tws	Rng	Sec	Zone	X	Y	Wells	Min	Max	Avg
ŞJ	28N	09W	20				2	40	71	5€

Record Count: 2

AVERAGE DEPTH OF WATER REPORT 01/05/2009

								(Depth	Water in	Feet)
Bsn	Tws	Rng	Sec	Zone	X	Y	Wells	Min	Max	Avg
SJ	29N	0 9W	02				28	3	71	11
SJ	29N	09W	03				10	2	40	11
SJ	29N	09W	04				2	5	20	13
SJ	29N	09W	0.5				3	16	20	18
SJ	29N	0 9W	0€				1	40	40	40
ŝJ	29N	09W	07				1	6	6	5
SJ	29N	0 9 W	80				3	24	100	65
SJ	29N	09W	09				2	5	6	6
SJ	29N	09W	09		273716	2090921	1	250	250	250
SJ	29N	09W	16				2	87	100	94
SJ	29N	09W	18				9	1	5	4

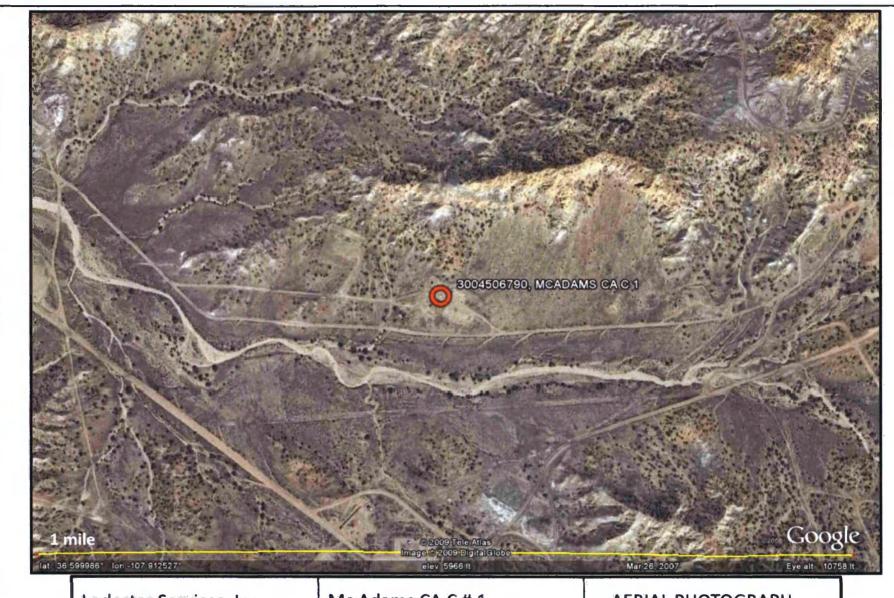
AVERAGE DEPTH OF WATER REPORT 11/15/2008

								(Depth	Water in	Feet)
Bsn	Tws	Rng	Sec	Zone	X	Y	Wells	Min	Max	Avg
RG	29N	10W	25				1.	450	4.50	450
SJ	29N	1000	13				3	1.0	20	17
SJ	29N	1007	18				1	65	€5	€5
SJ	29N	1000	19				3	2	9	5
SJ	29N	100	20				4	2	12	€.
SJ	29N	109	21				5	7	30	17
SJ	29N	100	22				1	20	20	20
SJ	29N	10W	23				1	1€	16	16
SJ	29N	109	24				3	20	34	28
SJ	29N	100	25				1	12	12	12
SJ	29N	1077	26				1	4	4	4
SJ	29N	10.00	27				1	31	31	31
SJ	29N	10W	28				9	.4	70	23
SJ	29N	10W	28	V	484600	2075.600	1	20	20	20
SJ	29N	1007	29				1	35	35	35
SJ	29N	10W	29		270344	2071311	1	50	50	50
SJ	29N	10W	30				1	10	10	10
SJ	29N	1 U 97	33				1	140	140	140
SJ	29N	10W	35				1	30	30	30
SJ	29N	10W	36			-	1	38	38	38

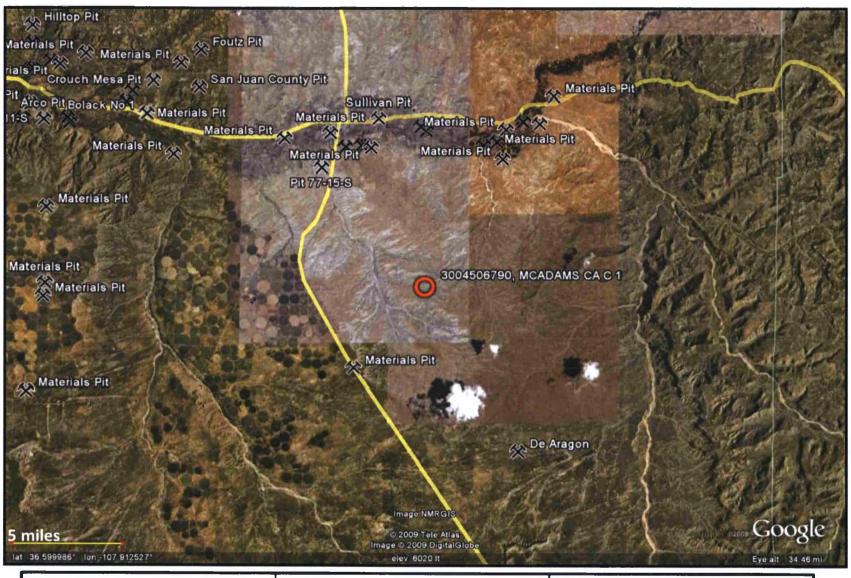
AVERAGE DEPTH OF WATER REPORT 11/10/2008

							(Depth	Water in	Feet)
Bsn	Tws	Rng S	ec Zone	X	Y	Wells	Min	Max	Avg
SJ	29N	11W 0	7			2	55	210	133
SJ.	29N	1100 1	. Û			1	48	48	48
SJ.	29N	11W 1	.3			1	300	3.00	3.00
SJ	29N	11W 1	.4			4	6	56	24
SJ	29N	11W 1	.5			3	12	3.0	21
SJ	29N	1177 1	6			1	40	40	40
SJ	29N	1100 1	7			2	ϵ	80	43
SJ	29N	1190 1	9			3	1.8	55	31
SJ	29N	11W 1	9	440000	2077700	1	E	€	6
SJ	29N	11W 2	20			2	3	30	17
SJ	29N	11W 2	21			7	8	55	18
SJ	29N	1197 2	2.2			25	3	59	15
SJ	29N	11W 2	23			15	15	3.0	21
SJ	29N	1177 2	4			2	12	18	15
SJ	29N	11W 2	2.5			1	25	25	2.5
SJ	29N	11W 2	6			1	43	43	43
SJ	29N	11W 2	27			20	ϵ	186	29
SJ	29N	11W 2	8			9	5	115	27
SJ	29N	117 2	28	267348	2075529	1	15	15	15
SJ	29N	11W 2	9			9	4	28	13
SJ	29N	11W 3	ΒŰ			6	6	25	1€
SJ	29N	11W 3	31			1	40	40	40
SJ	29N	11W 3	31	266438	2067001	1	45	4.5	45
SJ	29N	11W 3	33			1.	30	30	30

Record Count: 119

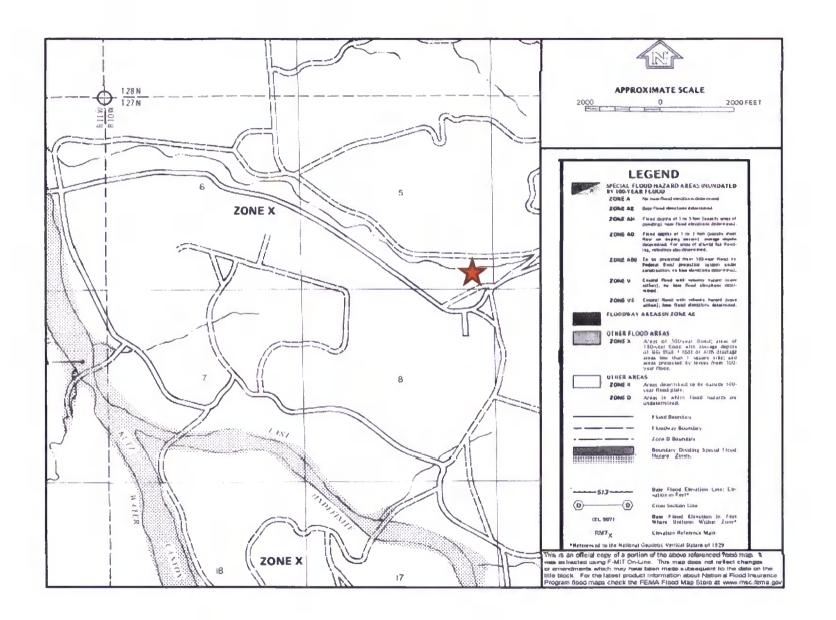


Lodestar Services, Inc PO Box 4465 Durango, CO 81302 Mc Adams CA C # 1 T27N,R10W,05P SAN JUAN COUNTY, NM **AERIAL PHOTOGRAPH**



Lodestar Services, Inc PO Box 4465 Durango, CO 81302 Mc Adams CA C # 1 T27N,R10W,05P SAN JUAN COUNTY, NM

Mines and Quarries Map



XTO Energy Inc. San Juan Basin (Northwest New Mexico) General Design and Construction Plan For Below-Grade Tanks

In accordance with Rule 19.15.17.11 NMAC the following information describes the design and construction of below-grade tanks on XTO Energy Inc. (XTO) locations. This is XTO's standard procedure for all below-grade tanks. A separate plan will be submitted for any below-grade tank which does not conform to this plan.

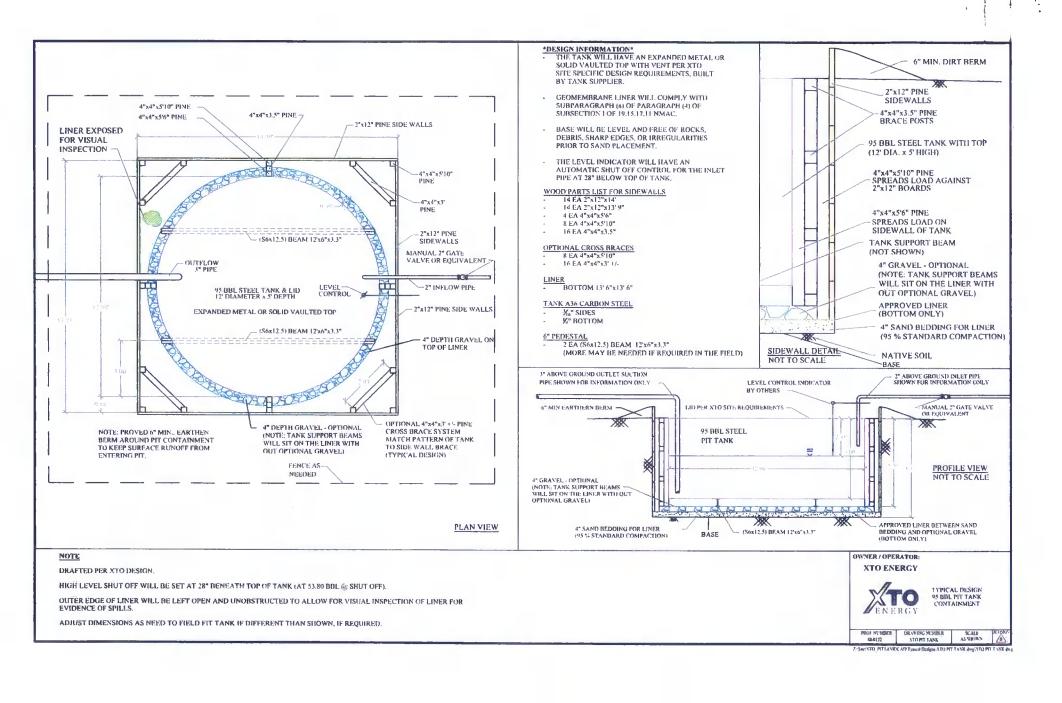
General Plan

- 1. XTO will design and construct below-grade tanks to contain liquids and solids and prevent contamination of fresh water and protect public health and environment.
- 2. XTO will post a well sign, in compliance with 19.15.3.103 NMAC, on the existing well site operated by XTO where the existing below-grade tank is located. The sign will list the Operator on record as the operator, the location of the well site by unit letter, section, township, range, and emergency telephone numbers.
- 3. XTO is requesting approval of an alternative fencing to be used on below-grade tank locations. Below-grade tank locations will be fenced utilizing 48" steel mesh field-fence (hogwire) with pipe railing along the top. A 6' chain link fence will be utilized around the well pad if the well site is within a city limits or ¼ mile of a permanent residence, school, hospital, institution or church. Below-grade tanks located within 1000' of a permanent residence, school, hospital, institution or church will be fenced by 6' chain link fence with at least two strands of barbed wire at the top. All gates associated with below-grade tanks will remain closed and locked when responsible individuals are not on site.
- 4. XTO shall construct below-grade tanks with an expanded metal covering or solid vaulted top on the top of the below-grade tank.
- 5. XTO will ensure that below-grade tanks are constructed of materials resistant to the below-grade tank's particular contents and resistant to damage from sunlight. Tanks will be constructed of A36 carbon steel with 3/16" sides and \(\frac{1}{2} \) bottom. (See attached drawing).
- 6. The below-grade tank system will have a properly constructed foundation consisting of a level base free of rocks, debris, sharp edges or irregularities to prevent punctures, cracks or indentations of the liner or tank bottom. Sand bedding (4") will be placed on top of a level foundation to ensure prevention of punctures, cracks or indentations of the liner or tank bottom.
- 7. XTO will construct a berm and/or diversion ditch in a manner that prevents the collection of surface water run-on. Below-grade tanks will be equipped with automatic high level shut-off devices as well as manually operated shut-off valves. (See attached drawing).
- 8. XTO will construct and use below-grade tanks that do not have double walls. The below-grade tank sidewalls will be open for visual inspection for leaks. The sidewalls of the cellar will be constructed with 2" X 12" pine sidewalls and 4" X 4" pine brace posts. The below-grade tank

XTO Energy Inc.
San Juan Basin (Northwest New Mexico)
General Design and Construction Plan
For Below-Grade Tanks
Page 2

bottom will be elevated a minimum of 6" above the underlying ground surface and the belowgrade tank will be underlain with a geomembrane liner to divert leaked liquid to a location that can be visually inspected. (See attached drawing).

- XTO will equip below-grade tanks designed in this manner with a properly functioning automatic high-level shut-off control device and manual controls to prevent overflows. (See attached drawing).
- 10. XTO will demonstrate to the OCD that the geomembrane liner complies with the specifications of Subparagraph (a) of Paragraph (4) of Subsection I of 19.15.17.11 NMAC and obtain approval from OCD prior to the installation of the design. The geomembrane liner shall have a hydraulic conductivity no greater than 1 x 10-9 cm/sec. The geomembrane liner shall be composed of an impervious, synthetic material that is resistant to petroleum hydrocarbons, salts and acidics and alkaline solutions. The liner material shall be resistant to ultraviolet light. Liner compatibility shall comply with EPA SW-846 method 9090A. (See attached drawing).
- 11. The general specifications for design and construction are attached.



XTO Energy Inc. San Juan Basin (Northwest New Mexico) General Maintenance and Operating Plan For Below-Grade Tanks

In accordance with Rule 19.15.17.12 NMAC the following information describes the operation and maintenance of below-grade tanks on XTO Energy Inc. (XTO) locations. This is XTO's standard procedure for all below-grade tanks. A separate plan will be submitted for any below-grade tank which does not conform to this plan.

General Plan

- XTO will operate and maintain below-grade tanks to contain liquids and solids, maintain the
 integrity of the liner and secondary containment system, prevent contamination of fresh water and
 protect public health and the environment. Fluid levels will be monitored weekly and high levels
 will be removed as necessary. Monthly inspections will be conducted to monitor integrity of
 below-grade tank systems and below-grade tanks will be equipped with automatic high-level
 shut-off devices.
- 2. XTO will not allow below-grade tanks to overflow and will use berms and/or diversion ditch to prevent surface run on to enter the below-grade tank. Below-grade tanks will be equipped with automatic high-level shut-off control devices as well as manually operated shut-off valves. See attached drawing for vault design and placement of diversion berms and shut-off devices.
- 3. XTO will continuously remove any visible or measurable layer of oil from the fluid surface of below-grade tanks in order to prevent significant accumulation of oil.
 - 4. XTO will inspect the below-grade tank monthly and maintain written records for five years. Monthly inspections will consist of documenting the following: (see attached template),

Well Name

API#

Sec., Twn., Rng.

XTO Inspector's name

Inspection date and time

Visible tears in liner

Visible signs of tank overflow

Collection of surface run on

Visible layer of oil

Visible signs of tank leak

Estimated freeboard

- 5. XTO will maintain adequate freeboard to prevent over topping of the below-grade tank. High level shut-off devices control the freeboard at an average of 28" beneath the top of the tank.
- 6. XTO will not discharge into or store any hazardous waste in any below-grade tank.
- If a below-grade tank develops a leak, or if any penetration of a below-grade tank occurs below
 the liquids surface, XTO will remove all liquids above the damage or leak line within 48 hours,

XTO Energy Inc. San Juan Basin (Northwest New Mexico) General Maintenance and Operating Plan For Below-Grade Tanks Page 2

notify the appropriate division district office within 48 hours of the discovery and repair the damage or replace the below-grade tank. If an existing below-grade tank does not meet current requirements of Paragraphs 1-4 of Subsection I of 19.15.17.11 NMAC the tank will be modified or retrofitted to comply. If compliance can not be achieved XTO will implement the approved closure plan.

MONTHLY BELOW GRADE TANK INSPECTION FORM												
Well Nan	ne:				API No.:							
Legals	Sec:		Township:		Range:							
XTO Inspector's Name	Inspection Date	Inspection Time	Any visible finer tears (Y/N)	Any visible signs of tank overflows (Y/N)	Collection of surface run on (Y/N)	Visible layer of oil (Y/N)	Any visible signs of a tank leak (Y/N)	Freeboard Est. (ft)				
Name	Date	riine	tears (1/14)	tank overnows (17/N)	Tun on (17N)	Of Oil (17N)	or a tank leak (17/N)	ESt. (II)				
						_						
						·						
Notes:	Provide De	tailed Descri	ption:									
A 4:												
Misc:												

XTO Energy Inc. San Juan Basin (Northwest New Mexico) General Closure Plan For Below-Grade Tanks

In accordance with Rule 19.15.17.13 NMAC the following information describes the closure requirements of below-grade tanks on XTO Energy Inc. (XTO) locations. This is XTO's standard procedure for all below-grade tanks. A separate plan will be submitted for any below-grade tank which does not conform to this plan.

General Plan

- XTO will close below-grade tanks within the time periods provided in 19.15.17.13 NMAC, or by an earlier date that the division requires because of imminent danger to fresh water, public health or the environment.
- 2. XTO will close a below-grade tank that does not meet the requirements of Paragraphs (1) through (4) of Subsection I of 19.15.17.11 NMAC or is not included in Paragraph (5) of Subsection I of 19.15.17.11 NMAC within five years after June 16, 2008, if not retrofitted to comply with Paragraphs (1) through (4) of Subsection I of 19.15.17.11 NMAC.
- 3. XTO will close a permitted below-grade tank within 60 days of cessation of the below-grade tank's operation or as required by the transitional provisions of Subsection B of 19.15.17.17 NMAC in accordance with a closure plan that the appropriate division district office approves. The closure report will be filed on form C-144.
- 4. XTO will remove liquids and sludge from below-grade tanks prior to implementing a closure method and will dispose of the liquids and sludge in a division-approved facility. Approved facilities and waste streams include:

Envirotech Permit No. NM01-0011 and IEI Permit No. NM 01-0010B

Soil contaminated by exempt petroleum hydrocarbons

Produced sand, pit sludge and contaminated bottoms from storage of exempt wastes

Basin Disposal Permit No. NM01-005 Produced water

- 5. XTO will remove the below-grade tank and dispose of it in a division approved facility or recycle, reuse, or reclaim it in a manner that the appropriate division district office has approved prior to removal. Any associated liners will be removed, properly cleaned and disposed of per 19.15.9.712 NMAC at San Juan County Landfill. Documentation of the final disposition will be included in the closure report.
- 6. XTO will remove any on-site equipment associated with a below-grade tank unless the equipment is required for some other purpose.
- 7. XTO will test the soils beneath the below-grade tank to determine whether a release has occurred. At a minimum 5 point composite sample will be collected along with individual grab samples from any area that is wet, discolored or showing other evidence of a release. Samples will be

XTO Energy Inc.
San Juan Basin (Northwest New Mexico)
General Closure Plan
For Below-Grade Tanks
Page 2

analyzed for BTEX, TPH and chlorides to demonstrate that the benzene concentration, as determined by EPA SW-846 methods 8021B or 8260B or EPA method that the division approves, does not exceed 0.2 mg/kg; total BTEX concentration, as determined by EPA SW-846 methods 8021B or 8260B or other EPA method that the division approves, does not exceed 50 mg/kg; the TPH concentration, as determined by EPA method 418.1 or other EPA method that the division approves, does not exceed 100mg/kg; and the chloride concentration, as determined by EPA method 300.1 or other EPA method that the division approves, does not exceed 250 mg/kg, or the background concentration, whichever is greater. XTO will notify the division of its results on form C-141.

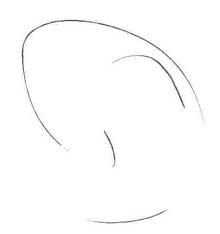
- 8. If XTO or the division determines that a release has occurred, XTO will comply with 19.15.3.116 NMAC and 19.15.1.19NMAC as appropriate.
- 9. If the sampling program demonstrates that a release has not occurred or that any release does not exceed the concentrations specified in Paragraph (4) of Subsection E of 19.15.17.13 NMAC, XTO will backfill the excavation with compacted, non-waste containing, earthen material; construct a division prescribed soil cover; recontour and re-vegetate the site.
- 10. Notice of Closure operations will be given to the Aztec Division District III office between 72 hours and one week prior to the start of closure activities via email or verbally. The notification will include the following:
 - i. Operator's name
 - ii. Well Name and API Number
 - iii. Location by Unit Letter, Section, Township, and Range

The surface owner shall also be notified prior to the implementation of any closure operations of below-grade tanks as per the approved closure plan using certified mail, return receipt requested.

- 11. Re-contouring of location will match fit, shape, line, form and texture of the surrounding area. Re-shaping will include drainage control, prevent ponding, and prevent erosion. Natural drainages will be unimpeded and water bars and/or silt traps will be placed in areas where needed to prevent erosion on a large scale. Final re-contour shall have a uniform appearance with smooth surface, fitting the natural landscape.
- 12. A minimum of 4 feet of cover shall be achieved and the cover shall include 1 foot of suitable material to establish vegetation at the site, or the background thickness of topsoil, whichever is greater. Soil cover will be constructed to the site's existing grade and ponding of water and erosion of the cover material will be prevented with drainage control, natural drainages and silt traps where needed.
- 13. XTO will seed the disturbed areas the first growing season after the operator closes the pit. Seeding will be accomplished via drilling on the contour whenever practical or by other division-approved methods. BLM or Forest Service stipulated seed mixes will be used on federal lands. Vegetative cover will equal 70% of the native perennial vegetative cover (un-impacted) consisting of at least three native plant species, including at least one grass, but not including noxious weeds, and maintain that cover through two successive growing seasons. Repeat seeding or planting will be continued until successful vegetative growth occurs.

XTO Energy Inc. San Juan Basin (Northwest New Mexico) General Closure Plan For Below-Grade Tanks Page 3

- 14. All closure activities will include proper documentation and be available for review upon request and will be submitted in closure report form to OCD within 60 days of closure of the below-grade tank. Closure report will be filed on form C-144 and incorporate the following:
 - i. Proof of closure notice to division and surface owner;
 - ii. Details on capping and covering, where applicable;
 - iii. Inspection reports;
 - iv. Confirmation sampling analytical results;
 - v. Disposal facility name(s) and permit number(s);
 - vi. Soil backfilling and cover installation;
 - vii. Re-vegetation application rates and seeding techniques, (or approved alternative to re-vegetation requirements if applicable);
 - viii. Photo documentation of the site reclamation.



4.0